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| TACATGCTG  | 1550  |
| GATGGCGCGT | 1600  |
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| GATACCAACG | 1750  |
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| GATTCAACCC | 1950  |
| CCGCCGGCTA | 2000  |
| TGATATCATG | 2050  |
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| TTTGAATGGT | 2150  |
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FTSAHEEDED SCLKAGVYNV DGDETVPVLS AGYMCACAWR GKTRFNPSGI 600  
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Arg Glu Tyr Ser His Ser Pro Pro Ser Thr Leu Leu Glu Gly Arg Gly  
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ACC CAG AGC GGT GCA CAT GTT GAT ATA ATG GGG AAC TTT GCT CTA ATT 240  
Thr Gln Ser Gly Ala His Val Asp Ile Met Gly Asn Phe Ala Leu Ile  
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Leu Lys Leu  
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| TTCATTCTGTC | CCTTTGTCAA | ATTTACATTT | GACAGGACGC | CAATGCGATA | CGATGTTG | 507 |
| TACCGCTATT  | TTCAGCATTG | TATATTAAAC | TGTACAGGTG | TAAGTTGCAT | TTGCCAGC | 565 |
| TGAAATTGTG  | TAGTCGTTTT | CTTTACGATT | TAATANCAAG | TGGCGGAGCA | GTGCCCCA | 623 |
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Leu Lys Leu  
115

$\langle 400 \rangle$  9'

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|       | gtntacngtt  | tntatgggta  | ggaagcggac | ggagcgagcc  | tacatctatc | 150 |
|       | tggcgccga   | tcccgggacg  | acaacgcac  | tttagatgac  | gatcgatacg | 200 |
|       | actttgactn  | aggggcacat  | tgaccacggt | gtgattttgg  | gcgaaggcga | 250 |
|       | tggcacagtg  | aaccttatga  | gtttggggta | cctgtgcaat  | aaggggtgga | 300 |
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|       | ccgcatgaac  | cagaacggtt  | caatccgaga | ggagggccga  | atacggcgga | 400 |
|       | tcacgtggat  | attctaggaa  | ggcagaatct | aaacgagtac  | attcttaaag | 450 |
|       | tggcggcagg  | tcgaggcgat  | acaattgagg | attttattac  | tagtaatat  | 500 |
|       | cttaaatatg  | tagaaaagg   | tgaaatttat | gaagagtaat  | taaatacggc | 550 |
|       | acataaggtta | ctcaatagta  | tgactaatta | aaaaaaaaatt | ttttttctaa | 600 |
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| TGATTCTGGT  | TCCAGGAAAC | GGAGGTAACC  |
| AGAGAATACA  | AGCCAAGTAG | TGTCTGGTGT  |
| TCATAAGAAG  | AGTGGTGGAT | GGTTTAGGCT  |
| TATTGTCTCC  | CTTCACCAGG | TGCTTCAGCG  |
| GACCCTGATT  | TGGATGATTA | CCAAAATGCT  |
| TCCTCATTTT  | GGTTCGACCA | AATCACTTCT  |
| GGTTAGTACT  | TTCCAAGATA | TATCATTTTG  |
| AAATAGACAT  | AAATTTGGGG | GATTATTGTT  |
| GCTAGTCGGT  | AATGTGAGTG | TTATGTTAGT  |
| GTGATTTTCC  | ATTTTAAATG | AAGCTAGAAA  |
| CTATGTCATG  | AGAATTATAA | GGACACTATG  |
| GGTTTGATTT  | GCAGAGATGC | CACATCTTAC  |
| TCTAGAGAAA  | AAATGCGGGT | ATGTTAACGA  |
| CATATGATTT  | CAGGTACGGC | CTGGCTGCTT  |
| GCCTCACAGT  | TCCTACAAGA | CCTCAAACAA  |
| CGAGAACGAA  | GGAAAGCCAG | TGATACTCCT  |
| TTTTTCGTCCT | CCATTTGCTC | AACCGTACCA  |
| TACATCAAAC  | ACATTTGCTG | ACTCGCTGCG  |
| TCAGATGAAG  | ACATTTGCTT | CTGGCAACAC  |
| ACCCTTTGCT  | GGTCAGACGG | CATCAGAGGA  |
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| AACTCCCCAG  | GTAACTACA  | CAGCTTACGA  |
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| TTAACAGAGG  | AGCTGATGAC | TCCGGGAGTG  |
| GAGAGGAGTT  | GATACACCGG | AGGTTTTGAT  |
| ATAAGCAACC  | AGAGATTAAG | TATGGAGATG  |
| GCGAGCTTAG  | CAGCTTTGAA | AGTCGATAGC  |
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| TTCACGGCGA  | CTACTCGAAG  | CTATCGGGTA  | TAATCATTCC | GGGATTGCGG  | 150  |
| TCGACGCAGC  | TACGAGCGTG  | GTCGATCCTT  | GACTGTCCAT | ACACTCCGTT  | 200  |
| GGACTTCAAT  | CCGCTCGACC  | TCGTATGGCT  | AGACACCACT | AAGGTCCGTG  | 250  |
| ATCTTCATTT  | CCTTCGCTCC  | TTATTCCTGTC | GGTCGAGTCA | CTTGTTGATG  | 300  |
| AATTCCAAGC  | GAAATATAGC  | AATGAAGCAT  | GTCTCGTCTC | TCTTATTGAT  | 350  |
| TCGTTCAATTA | GTCAACAGTG  | ACGCTTCTGA  | ATCTGAGTTT | AGAGTCATAT  | 400  |
| AAAACAGCTG  | ACTCGGCGAG  | TGTTTCCCAT  | CGCTTTTGGT | TCGCTAAATG  | 450  |
| TAGCGCAATG  | AATGTGTAAT  | TAGTCTCCGC  | TTTTTATTCA | ACTAGATCTG  | 500  |
| CAAGTTTTTC  | AGAGTGCTCA  | ATAGTACTTA  | GAAAATGTTA | GGTCATTTTA  | 550  |
| CTTGTCATT   | GTGATTCCTT  | TGGTTGTTGC  | TTACTGATCG | ACGTGATGGA  | 600  |
| TGGTTTACAG  | CTTCTTTCTG  | CTGTCAACTG  | CTGGTTTAAG | TGTATGGTGC  | 650  |
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| AGTGGTCTTT  | CAGCCATCAC  | AGAATTGGAT  | CCAGGTTACA | TAACAGGTAG  | 750  |
| TTTCGGATTT  | TTCTTTCTTT  | TGAGTTTTCT  | TCAATTTGAT | ATCATCTTGT  | 800  |
| TGTGATATAA  | TATGGCTAAG  | TTCATTAATT  | TGGTCAATTT | TCAGGTCCTC  | 850  |
| TTTCTACTGT  | CTGGAAAGAG  | TGGCTTAAGT  | GGTGTGTTGA | GTTTGGTATA  | 900  |
| GAAGCAAATG  | CAATTGTCGC  | TGTTCCATAC  | GATTGGAGAT | TGTCACCAAC  | 950  |
| CAAATTGGA   | GAGCGTGACC  | TTTACTTTCA  | CAAGCTCAAG | TTAGTCCTTA  | 1000 |
| TCAGGCTAAT  | GTCTTTTATC  | TTCTCTTTTT  | ATGTAAGATA | AGCTAAGAGC  | 1050 |
| TCTGGTCGTC  | TTCTTTTTTG  | CAGGTTGACC  | TTTGAAGTGC | CTTTAAAACT  | 1100 |
| CCGTGGCGGC  | CCTTCTATAG  | TATTTGCCCA  | TTCAATGGGT | AATAATGTCT  | 1150 |
| TCAGATACTT  | TCTGGAATGG  | CTGAGGCTAG  | AAATTGCACC | AAAACATTAT  | 1200 |
| TTGAAGTGGC  | TTGATCAGCA  | TATCCATGCT  | TATTTGCGTG | TTGGTACCGG  | 1250 |
| CCTACTATCC  | TTAAGTTACC  | ATTTTATTTT  | TTCTCTAATT | GGGGGAGTTA  | 1300 |
| TGTTGTGACT  | TACTGGATTG  | AGCTCGATAC  | CTGATTTGTT | GTTGATTTAG  | 1350 |
| GAGCTCCTCT  | TCTTGGTTCT  | GTTGAGGCAA  | TCAAATCTAC | TCTCTCTGGT  | 1400 |
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| TGAAAGTATT  | ACTTTTGTGA  | ATTGAACTGC  | TGTACGCGAT | ATGGTATCTG  | 1550 |
| TAGATCTTGA  | AGTGCTAGTT  | ATCAAAGAAC  | ATATTGTGGG | TAGTATACCT  | 1600 |
| GTCAGCGGCC  | TTAGCTAATA  | CAACCAAACC  | ACATGTACAC | TGATTTAGTT  | 1650 |
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| GGTTGTTGTC  | CAATTCCTTT  | GCGTCGTCAT  | TGTGGCTTAT | GCCATTTTCA  | 1850 |
| AAGAATTGCA  | AGGGTGATAA  | CACATTCTGG  | ACGCATTTTT | CTGGGGGTGC  | 1900 |
| TGCAAAGAAA  | GATAAGCGCG  | TATACCACTG  | TGATGAAGAG | GAATATCAAT  | 1950 |
| CAAAATATTC  | TGGCTGGCCG  | ACAAATATTA  | TTAACATTGA | AATTCCTTCC  | 2000 |
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| GCTATTAAGC  | GTAAAGGTA   | CTAAATGTAT  | GAAGCTGTCT | GTCATAGGTT  | 2850 |



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| CACGGATATC | ATTTATGAAA  | CTGAAGGTTC | TCTCGTGTCA   | AGGTAATTTT | 2950 |
| CCGGATATGC | AGAAGTAAAA  | CAGGAAGGCA | AAGTCTTCTG   | TATCAGTCTA | 3000 |
| GTGGCATGTT | ATCTCAGTTG  | GATAAGCAAA | TTATTAAACA   | ACTAAAATTT | 3050 |
| AAGTACTTTT | TTATCATTCC  | TTTTGAGCTT | AGTGGATGAT   | CAGTGGCTTA | 3100 |
| AAGTGGGAAG | AGGTGTTGCA  | TGAAACATGA | CACTTGTATC   | AAAGATAACT | 3150 |
| AGCAAAACAA | AACATAACCA  | TTTCTGAATT | TCATATTATT   | AGGAGTAGTC | 3200 |
| GTGCTTTTAA | AAAATTTGTT  | TTAAGAAACC | GAAAAACATG   | TTCATATCTT | 3250 |
| GATTGTGCAA | TATCTGCAGG  | TCTGGTCTG  | TGGTTGATGG   | GAAACGCTGA | 3300 |
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| TCAGATGTAC  | AAGTGCATCT | AAATATAGAG  | CATCAACATG | GTGAAGATAT | 100 |
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| AGGATTCTGA  | AAGTTTTCCT | GGGACAAAGAA | CAGCAGTTTG | GGAGCTTGAT | 200 |
| AAAGCAAATC  | ACAGGAACAT | TGTCAGATCT  | CCAGCTTTGA | TGCGGGAGCT | 250 |
| GTGGCTTGAG  | ATGTGGCATG | ATATTCAATC  | TGATAAAAAG | TCCAAGTTTG | 300 |
| TTACAAAAGG  | TGGTGTCTGA | TCCTCACTAT  | TTTCTTCTAT | AAATGTTTGA | 350 |
| GTTTGTATTG  | ACATTGTAAG | TATTGCAACA  | AAAAGCAAAG | CGTGGGCCTC | 400 |
| TGAGGGATGA  | GGAGTGCTAT | TGGGATTACG  | GGAAAGCTCG | ATGTGCATGG | 450 |
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| GATATGTATT  | CGGGGATGTT | CACCTGGGAC  | AGAGTTGCAG | ATTGAAGAGT | 600 |
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| FFFAVGDDNAVDFDPATLDKFGNMLGSSDLDDIKGYLSYNVFKDAPFTTDKPSQSPSGNEVQVGLDMYNE     | 140 |
| GYRSDHPVIMVPGVISSGLESWSFNNCISIPYFRKRLWGSWSMLKAMFLDKQCWLEHMLDKKTGLDPKGI     | 210 |
| KLRAAQGFEEADDFITGYWIWSKVIENLAAIEYEPNMLSASYDWRLSYANLEERDKYFSKLMFIEYSN       | 280 |
| IVHKKKVVLI SHSMGSQVTTYFFKWVEAEGYGNGGPTWVNDHIEAFINISGSLIGAPKTVAALLSGEMKD    | 350 |
| TGIVITLNI LEKF SRSERAMMVRTMGGVSSMLPKGGDVAPDDL NQTNF SNGAIIRYREDIDKD HDEFDI | 420 |
| DDALQLKNVTD DDFKVMLAKNYS HGLAWTEKEV LKNNEMPSKWINPLETSLPYAPDMKIYCVHGVGKPT   | 490 |
| ERGYYYTNNPEGQPVIDSSVNDG TKVENGI VMD DGDGTL PIALGLVCNKVWQTKRFNPANTSITNYEIK  | 560 |
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Lys Arg Asp Gly Asn Gly Arg Lys Arg Trp Arg Asp Ser Arg Arg Leu  
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Gly Ala Tyr His Val His Asn Ser Asp Ser Asp Leu Phe Asp Asn Phe  
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Val Asn Phe Asp Ser Leu Lys Val Tyr Leu Asp Asp Trp Lys Asp Val  
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180 185 190

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Gly Asp Asp Glu Cys Asp Ser Ser Ala His Phe Arg Lys Arg Leu Trp  
195 200 205

|    | Gly | Ser | Phe | Tyr | Met | Leu | Arg | Thr | Met | Val | Met | Asp | Lys | Val | Cys | Trp |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    | 210 |     |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| 5  | Leu | Lys | His | Val | Met | Leu | Asp | Pro | Glu | Thr | Gly | Leu | Asp | Pro | Pro | Asn |
|    | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
|    | Phe | Thr | Leu | Arg | Ala | Ala | Gln | Gly | Phe | Glu | Ser | Thr | Asp | Tyr | Phe | Ile |
|    |     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| 10 | Ala | Gly | Tyr | Trp | Ile | Trp | Asn | Lys | Val | Phe | Gln | Asn | Leu | Gly | Val | Ile |
|    |     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
|    | Gly | Tyr | Glu | Pro | Asn | Lys | Met | Thr | Ser | Ala | Ala | Tyr | Asp | Trp | Arg | Leu |
|    |     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| 15 | Ala | Tyr | Leu | Asp | Leu | Glu | Arg | Arg | Asp | Arg | Tyr | Phe | Thr | Lys | Leu | Lys |
|    |     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| 20 | Glu | Gln | Ile | Glu | Leu | Phe | His | Gln | Leu | Ser | Gly | Glu | Lys | Val | Cys | Leu |
|    | 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
|    | Ile | Gly | His | Ser | Met | Gly | Ser | Gln | Ile | Ile | Phe | Tyr | Phe | Met | Lys | Trp |
|    |     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| 25 | Val | Glu | Ala | Glu | Gly | Pro | Leu | Tyr | Gly | Asn | Gly | Gly | Arg | Gly | Trp | Val |
|    |     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
|    | Asn | Glu | His | Ile | Asp | Ser | Phe | Ile | Asn | Ala | Ala | Gly | Thr | Leu | Leu | Gly |
|    |     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| 30 | Ala | Pro | Lys | Ala | Val | Pro | Ala | Leu | Ile | Ser | Gly | Glu | Met | Lys | Asp | Thr |
|    |     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| 35 | Ile | Gln | Leu | Asn | Thr | Leu | Ala | Met | Tyr | Gly | Leu | Glu | Lys | Phe | Phe | Ser |
|    | 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
|    | Arg | Ile | Glu | Arg | Val | Lys | Met | Leu | Gln | Thr | Trp | Gly | Gly | Ile | Pro | Ser |
|    |     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| 40 | Met | Leu | Pro | Lys | Gly | Glu | Glu | Val | Ile | Trp | Gly | Asp | Met | Lys | Ser | Ser |
|    |     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
|    | Ser | Glu | Asp | Ala | Leu | Asn | Asn | Asn | Thr | Asp | Thr | Tyr | Gly | Asn | Phe | Ile |
|    |     | 435 |     |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| 45 | Arg | Phe | Glu | Arg | Asn | Thr | Ser | Asp | Ala | Phe | Asn | Lys | Asn | Leu | Thr | Met |
|    |     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| 50 | Lys | Asp | Ala | Ile | Asn | Met | Thr | Leu | Ser | Ile | Ser | Pro | Glu | Trp | Leu | Gln |
|    | 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
|    | Arg | Arg | Val | His | Glu | Gln | Tyr | Ser | Phe | Gly |     |     |     |     |     |     |

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Gly Val Asn Asn Pro Thr Glu Arg Ala Tyr Val Tyr Lys Glu Glu Asp  
 530 535 540  
 5 Asp Ser Ser Ala Leu Asn Leu Thr Ile Asp Tyr Glu Ser Lys Gln Pro  
 545 550 555 560  
 Val Phe Leu Thr Glu Gly Asp Gly Thr Val Pro Leu Val Ala His Ser  
 565 570 575  
 10 Met Cys His Lys Trp Ala Gln Gly Ala Ser Pro Tyr Asn Pro Ala Gly  
 580 585 590  
 Ile Asn Val Thr Ile Val Glu Met Lys His Gln Pro Asp Arg Phe Asp  
 595 600 605  
 15 Ile Arg Gly Gly Ala Lys Ser Ala Glu His Val Asp Ile Leu Gly Ser  
 610 615 620  
 20 Ala Glu Leu Asn Asp Tyr Ile Leu Lys Ile Ala Ser Gly Asn Gly Asp  
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 85 90 95  
 Thr Lys Ser Leu Leu Tyr Leu Asp Pro Arg Leu Arg Asp Ala Thr Ser  
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 55 Tyr Met Glu His Leu Val Lys Ala Leu Glu Lys Lys Cys Gly Tyr Val  
 115 120 125  
 60 Asn Asp Gln Thr Ile Leu Gly Ala Pro Tyr Asp Phe Arg Tyr Gly Leu  
 130 135 140



Ala Ala Ser Gly His Pro Ser Arg Val Ala Ser Gln Phe Leu Gln Asp  
 145 150 155 160  
 5 Leu Lys Gln Leu Val Glu Lys Thr Ser Ser Glu Asn Glu Gly Lys Pro  
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 180 185 190  
 10 Leu Asn Arg Thr Thr Pro Ser Trp Arg Arg Lys Tyr Ile Lys His Phe  
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 15 Phe Ala Ser Gly Asn Thr Leu Gly Val Pro Leu Val Asn Pro Leu Leu  
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 20 Ser Thr Lys Val Phe His Asp Arg Thr Lys Pro Leu Val Val Thr Pro  
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 25 Gln Val Asn Tyr Thr Ala Tyr Glu Met Asp Arg Phe Phe Ala Asp Ile  
 275 280 285  
 Gly Phe Ser Gln Gly Val Val Pro Tyr Lys Thr Arg Val Leu Pro Leu  
 290 295 300  
 30 Thr Glu Glu Leu Met Thr Pro Gly Val Pro Val Thr Cys Ile Tyr Gly  
 305 310 315 320  
 Arg Gly Val Asp Thr Pro Glu Val Leu Met Tyr Gly Lys Gly Gly Phe  
 325 330 335  
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 20 25 30

00000722560

|    | Asp | Gly | Leu | Phe | Arg | Lys | Arg | Leu | Trp | Gly | Gly | Thr | Phe | Leu | Cys | Trp |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    | 35  |     |     |     |     |     | 40  |     |     |     |     |     |     | 45  |     |     |
| 5  | Val | Glu | His | Met | Ser | Leu | Asp | Asn | Glu | Thr | Gly | Leu | Asp | Pro | Ala | Gly |
|    | 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
|    | Ile | Arg | Val | Arg | Ala | Val | Ser | Gly | Leu | Val | Ala | Ala | Asp | Tyr | Phe | Ala |
|    | 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| 10 | Pro | Gly | Tyr | Phe | Val | Trp | Ala | Val | Leu | Ile | Ala | Asn | Leu | Ala | His | Ile |
|    |     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
|    | Gly | Tyr | Glu | Glu | Lys | Asn | Met | Tyr | Met | Ala | Ala | Tyr | Asp | Trp | Arg | Leu |
|    |     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| 15 | Ser | Phe | Gln | Asn | Thr | Glu | Arg | Asp | Gln | Thr | Leu | Ser | Arg | Met | Lys | Ser |
|    |     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
|    | Asn | Ile | Glu | Leu | Met | Val | Ser | Thr | Asn | Gly | Gly | Lys | Lys | Ala | Val | Ile |
| 20 |     |     | 130 |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
|    | Val | Pro | His | Ser | Met | Gly | Val | Leu | Tyr | Phe | Leu | His | Phe | Met | Lys | Trp |
|    | 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| 25 | Val | Glu | Ala | Pro | Ala | Pro | Leu | Gly | Gly | Gly | Gly | Gly | Pro | Asp | Trp | Cys |
|    |     |     |     |     | 165 |     |     |     |     |     | 170 |     |     |     | 175 |     |
|    | Ala | Lys | Tyr | Ile | Lys | Ala | Val | Met | Asn | Ile | Gly | Gly | Pro | Phe | Leu | Gly |
|    |     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| 30 | Val | Pro | Lys | Ala | Val | Ala | Gly | Leu | Phe | Ser | Ala | Glu | Ala | Lys | Asp | Met |
|    |     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
|    | Arg | Met | Thr | Arg | Thr | Trp | Asp | Ser | Thr | Met | Ser | Met | Leu | Pro | Lys | Gly |
| 35 |     |     |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
|    | Gly | Asp | Thr | Ile | Trp | Gly | Gly | Leu | Asp | Trp | Ser | Pro | Glu | Leu | Pro | Asn |
|    | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     | 240 |     |
| 40 | Ala | Pro | Glu | Met | Glu | Ile | Tyr | Ser | Leu | Tyr | Gly | Val | Gly | Ile | Pro | Thr |
|    |     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
|    | Glu | Arg | Ala | Tyr | Val | Tyr | Lys | Leu | Asn | Gln | Ser | Pro | Asp | Ser | Cys | Ile |
|    |     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| 45 | Pro | Phe | Gln | Ile | Phe | Thr | Ser | Ala | His | Glu | Glu | Asp | Glu | Asp | Ser | Cys |
|    |     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
|    | Leu | Lys | Ala | Gly | Val | Tyr | Asn | Val | Asp | Gly | Asp | Glu | Thr | Val | Pro | Val |
| 50 |     |     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
|    | Leu | Ser | Ala | Gly | Tyr | Met | Cys | Ala | Lys | Ala | Trp | Arg | Gly |     |     |     |

|    |   |  |     |  |     |     |
|----|---|--|-----|--|-----|-----|
|    | 355   |  | 360 |  | 365 |     |
|    | Ala Ala Gly Gly Asn Gly Ser Asp Ile Gly His Asp Gln Val His Ser |  |     |  |     |     |
|    | 370   |  | 375 |  | 380 |     |
| 5  | Gly Ile Phe Glu Trp   |  |     |  |     |     |
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| 10 | <210> 4A  |  |     |  |     |     |
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| 20 | atg ggc aca ctg ttt cga aga aat gtc cag aac caa aag agt gat tct |  |     |  |     | 48  |
|    | Met Gly Thr Leu Phe Arg Arg Asn Val Gln Asn Gln Lys Ser Asp Ser |  |     |  |     |     |
|    | 1 5 10 15   |  |     |  |     |     |
| 25 | gat gaa aac aat aaa ggg ggt tct gtt cat aac aag cga gag agc aga |  |     |  |     | 96  |
|    | Asp Glu Asn Asn Lys Gly Gly Ser Val His Asn Lys Arg Glu Ser Arg |  |     |  |     |     |
|    | 20 30   |  |     |  |     |     |
| 30 | aac cac att cat cat caa cag gga tta ggc cat aag aga aga agg ggt |  |     |  |     | 144 |
|    | Asn His Ile His His Gln Gln Gly Leu Gly His Lys Arg Arg Arg Gly |  |     |  |     |     |
|    | 35 40 45  |  |     |  |     |     |
| 35 | att agt ggc agt gca aaa aga aat gag cgt ggc aaa gat ttc gac agg |  |     |  |     | 192 |
|    | Ile Ser Gly Ser Ala Lys Arg Asn Glu Arg Gly Lys Asp Phe Asp Arg |  |     |  |     |     |
|    | 50 55 60  |  |     |  |     |     |
| 40 | aaa aga gac ggg aac ggt aga aaa cgt tgg aga gat tcc aga aga ctg |  |     |  |     | 240 |
|    | Lys Arg Asp Gly Asn Gly Arg Lys Arg Trp Arg Asp Ser Arg Arg Leu |  |     |  |     |     |
|    | 65 70 75 80   |  |     |  |     |     |
| 45 | att ttc att ctt ggt gca ttc tta ggt gta ctt ttg ccg ttt agc ttt |  |     |  |     | 288 |
|    | Ile Phe Ile Leu Gly Ala Phe Leu Gly Val Leu Leu Pro Phe Ser Phe |  |     |  |     |     |
|    | 85 90 95  |  |     |  |     |     |
| 50 | ggc gct tat cat gtt cat aat agc gat agc gac ttg ttt gac aac ttt |  |     |  |     | 336 |
|    | Gly Ala Tyr His Val His Asn Ser Asp Ser Asp Leu Phe Asp Asn Phe |  |     |  |     |     |
|    | 100 105 110   |  |     |  |     |     |
| 55 | gta aat ttt gat tca ctt aaa gtg tat ttg gat gat tgg aaa gat gtt |  |     |  |     | 384 |
|    | Val Asn Phe Asp Ser Leu Lys Val Tyr Leu Asp Asp Trp Lys Asp Val |  |     |  |     |     |
|    | 115 120 125   |  |     |  |     |     |
| 60 | ctc cca caa ggt ata agt tcg ttt att gat gat att cag gct ggt aac |  |     |  |     | 432 |
|    | Leu Pro Gln Gly Ile Ser Ser Phe Ile Asp Asp Ile Gln Ala Gly Asn |  |     |  |     |     |
|    | 130 135 140   |  |     |  |     |     |
| 65 | tac tcc aca tct tct tta gat gat ctc agt gaa aat ttt gcc gtt ggt |  |     |  |     | 480 |
|    | Tyr Ser Thr Ser Ser Leu Asp Asp Leu Ser Glu Asn Phe Ala Val Gly |  |     |  |     |     |
|    | 145 150 155 160   |  |     |  |     |     |
| 70 | aaa caa ctc tta cgt gat tat aat atc gag gcc aaa cat cct gtt gta |  |     |  |     | 528 |
|    | Lys Gln Leu Leu Arg Asp Tyr Asn Ile Glu Ala Lys His Pro Val Val |  |     |  |     |     |

[illegible]

|    |   |      |
|----|---|------|
| 5  | atg cta cca aag gga gaa gag gtc att tgg ggg gat atg aag tca tct<br>Met Leu Pro Lys Gly Glu Glu Val Ile Trp Gly Asp Met Lys Ser Ser<br>420 425 430     | 1296 |
| 10 | tca gag gat gca ttg aat aac aac act gac aca tac ggc aat ttc att<br>Ser Glu Asp Ala Leu Asn Asn Asn Thr Asp Thr Tyr Gly Asn Phe Ile<br>435 440 445     | 1344 |
| 15 | cga ttt gaa agg aat acg agc gat gct ttc aac aaa aat ttg aca atg<br>Arg Phe Glu Arg Asn Thr Ser Asp Ala Phe Asn Lys Asn Leu Thr Met<br>450 455 460     | 1392 |
| 20 | aaa gac gcc att aac atg aca tta tcg ata tca cct gaa tgg ctc caa<br>Lys Asp Ala Ile Asn Met Thr Leu Ser Ile Ser Pro Glu Trp Leu Gln<br>465 470 475 480 | 1440 |
| 25 | aga aga gta cat gag cag tac tcg ttc ggc tat tcc aag aat gaa gaa<br>Arg Arg Val His Glu Gln Tyr Ser Phe Gly Tyr Ser Lys Asn Glu Glu<br>485 490 495     | 1488 |
| 30 | gag tta aga aaa aat gag cta cac cac aag cac tgg tcg aat cca atg<br>Glu Leu Arg Lys Asn Glu Leu His His Lys His Trp Ser Asn Pro Met<br>500 505 510     | 1536 |
| 35 | gaa gta cca ctt cca gaa gct ccc cac atg aaa atc tat tgt ata tac<br>Glu Val Pro Leu Pro Glu Ala Pro His Met Lys Ile Tyr Cys Ile Tyr<br>515 520 525     | 1584 |
| 40 | ggg gtg aac aac cca act gaa agg gca tat gta tat aag gaa gag gat<br>Gly Val Asn Asn Pro Thr Glu Arg Ala Tyr Val Tyr Lys Glu Glu Asp<br>530 535 540     | 1632 |
| 45 | gac tcc tct gct ctg aat ttg acc atc gac tac gaa agc aag caa cct<br>Asp Ser Ser Ala Leu Asn Leu Thr Ile Asp Tyr Glu Ser Lys Gln Pro<br>545 550 555 560 | 1680 |
| 50 | gta ttc ctc acc gag ggg gac gga acc gtt ccg ctc gtg gcg cat tca<br>Val Phe Leu Thr Glu Gly Asp Gly Thr Val Pro Leu Val Ala His Ser<br>565 570 575     | 1728 |
| 55 | atg tgt cac aaa tgg gcc cag ggt gct tca ccg tac aac cct gcc gga<br>Met Cys His Lys Trp Ala Gln Gly Ala Ser Pro Tyr Asn Pro Ala Gly<br>580 585 590     | 1776 |
| 60 | att aac gtt act att gtg gaa atg aaa cac cag cca gat cga ttt gat<br>Ile Asn Val Thr Ile Val Glu Met Lys His Gln Pro Asp Arg Phe Asp<br>595 600 605     | 1824 |
| 65 | ata cgt ggt gga gca aaa agc gcc gaa cac gta gac atc ctc ggc agc<br>Ile Arg Gly Gly Ala Lys Ser Ala Glu His Val Asp Ile Leu Gly Ser<br>610 615 620     | 1872 |
| 70 | gcg gag ttg aac gat tac atc ttg aaa att gca agc ggt aat ggc gat<br>Ala Glu Leu Asn Asp Tyr Ile Leu Lys Ile Ala Ser Gly Asn Gly Asp<br>625 630 635 640 | 1920 |
| 75 | ctc gtc gag cca cgc caa ttg tct aat ttg agc cag tgg gtt tct cag<br>Leu Val Glu Pro Arg Gln Leu Ser Asn Leu Ser Gln Trp Val Ser Gln<br>645 650 655     | 1968 |

1986

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Ala Gly Tyr Trp Ile Trp Asn Lys Val Phe Gln Asn Leu Gly Val Ile  
260 265 270

|    | Gly | Tyr | Glu | Pro | Asn | Lys | Met | Thr | Ser | Ala | Ala | Tyr | Asp | Trp | Arg | Leu |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    |     |     | 275 |     |     |     |     | 280 |     |     |     |     |     |     |     | 285 |
| 5  | Ala | Tyr | Leu | Asp | Leu | Glu | Arg | Arg | Asp | Arg | Tyr | Phe | Thr | Lys | Leu | Lys |
|    | 290 |     |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
|    | Glu | Gln | Ile | Glu | Leu | Phe | His | Gln | Leu | Ser | Gly | Glu | Lys | Val | Cys | Leu |
|    | 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| 10 | Ile | Gly | His | Ser | Met | Gly | Ser | Gln | Ile | Ile | Phe | Tyr | Phe | Met | Lys | Trp |
|    |     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
|    | Val | Glu | Ala | Glu | Gly | Pro | Leu | Tyr | Gly | Asn | Gly | Gly | Arg | Gly | Trp | Val |
| 15 |     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
|    | Asn | Glu | His | Ile | Asp | Ser | Phe | Ile | Asn | Ala | Ala | Gly | Thr | Leu | Leu | Gly |
|    |     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| 20 | Ala | Pro | Lys | Ala | Val | Pro | Ala | Leu | Ile | Ser | Gly | Glu | Met | Lys | Asp | Thr |
|    |     | 370 |     |     |     |     | 375 |     |     |     |     |     | 380 |     |     |     |
|    | Ile | Gln | Leu | Asn | Thr | Leu | Ala | Met | Tyr | Gly | Leu | Glu | Lys | Phe | Phe | Ser |
|    | 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| 25 | Arg | Ile | Glu | Arg | Val | Lys | Met | Leu | Gln | Thr | Trp | Gly | Gly | Ile | Pro | Ser |
|    |     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
|    | Met | Leu | Pro | Lys | Gly | Glu | Glu | Val | Ile | Trp | Gly | Asp | Met | Lys | Ser | Ser |
| 30 |     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
|    | Ser | Glu | Asp | Ala | Leu | Asn | Asn | Asn | Thr | Asp | Thr | Tyr | Gly | Asn | Phe | Ile |
|    |     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| 35 | Arg | Phe | Glu | Arg | Asn | Thr | Ser | Asp | Ala | Phe | Asn | Lys | Asn | Leu | Thr | Met |
|    |     | 450 |     |     |     |     | 455 |     |     |     |     |     | 460 |     |     |     |
|    | Lys | Asp | Ala | Ile | Asn | Met | Thr | Leu | Ser | Ile | Ser | Pro | Glu | Trp | Leu | Gln |
|    | 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| 40 | Arg | Arg | Val | His | Glu | Gln | Tyr | Ser | Phe | Gly | Tyr | Ser | Lys | Asn | Glu | Glu |
|    |     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
|    | Glu | Leu | Arg | Lys | Asn | Glu | Leu | His | His | Lys | His | Trp | Ser | Asn | Pro | Met |
| 45 |     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
|    | Glu | Val | Pro | Leu | Pro | Glu | Ala | Pro | His | Met | Lys | Ile | Tyr | Cys | Ile | Tyr |
|    |     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| 50 | Gly | Val | Asn | Asn | Pro | Thr | Glu | Arg | Ala | Tyr | Val | Tyr | Lys | Glu | Glu | Asp |
|    |     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
|    | Asp | Ser | Ser | Ala | Leu | Asn | Leu | Thr | Ile | Asp | Tyr | Glu | Ser | Lys | Gln | Pro |
|    | 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| 55 | Val | Phe | Leu | Thr | Glu | Gly | Asp | Gly | Thr | Val | Pro | Leu | Val | Ala | His | Ser |
|    |     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
|    | Met | Cys | His | Lys | Trp | Ala | Gln | Gly | Ala | Ser | Pro | Tyr | Asn | Pro | Ala | Gly |
| 60 |     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |

~~et Lys Hi  
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